



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/595,282	04/04/2006	David A. Janus	1200323N US	6688
35227	7590	10/29/2009	EXAMINER	
POLYONE CORPORATION			NILAND, PATRICK DENNIS	
33587 WALKER ROAD			ART UNIT	PAPER NUMBER
AVON LAKE, OH 44012			1796	
MAIL DATE		DELIVERY MODE		
10/29/2009		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

UNITED STATES PATENT AND TRADEMARK OFFICE

---

BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

---

*Ex parte* DAVID A. JARUS, GUOQIANG QIAN, TIE LAN, and  
JEFF CICERCHI

---

Appeal 2009-003491  
Application 10/595,282  
Technology Center 1700

---

Decided: October 28, 2009

---

Before JEFFREY T. SMITH, BEVERLY A. FRANKLIN, and  
JEFFREY B. ROBERTSON, *Administrative Patent Judges*.

ROBERTSON, *Administrative Patent Judge*.

DECISION ON APPEAL

## STATEMENT OF THE CASE

Appellants appeal under 35 U.S.C. § 134(a) from the Examiner's rejection of claims 1-20. (Appeal Brief filed January 3, 2008, hereinafter "App. Br.," 5). We have jurisdiction pursuant to 35 U.S.C. § 6(b).

We AFFIRM.

## THE INVENTION

Appellants describe a nanocomposite including a thermoplastic matrix polymer, nanoclay, and compatibilizing dispersion agent. Claim 1, reproduced below, is representative of the subject matter on appeal.

1. A nanocomposite, comprising:  
a thermoplastic matrix polymer, nanoclay, and  
compatibilizing dispersion agent having a weight ratio of  
nanoclay to compatibilizing dispersion agent of greater than  
3:1:1 and less than 10:1; and  
wherein the nanoclay comprises at least about 8 weight  
percent of the nanocomposite.

## THE REJECTIONS

The prior art relied upon by the Examiner in rejecting the claims on appeal is:

Drewniak                    US 2002/0156171 A1                    Oct. 24, 2002

There are three grounds of rejection for review on appeal:

- (1) the Examiner rejected claims 1-20 under 35 U.S.C. § 112, first paragraph as failing to comply with the written description requirement;
- (2) the Examiner rejected claims 1-20 under 35 U.S.C. § 102(b) as being anticipated by Drewniak; and
- (3) the Examiner rejected claims 1-20 under 35 U.S.C. § 103(a) as being unpatentable over Drewniak.

*35 U.S.C. § 112, First Paragraph Rejection*

The Examiner found that there was no basis in the originally filed Specification for the limitation of “about 8 percent by weight” nanoclay as recited in claim 1. (Examiner’s Answer entered March 28, 2008, hereinafter “Ans.” 3 and 6).

Appellants contend that Examples 5-16 demonstrate actual reduction to practice of nanocomposites with 8 weight percent nanoclay and that the recited amounts are consistent with a second non-claimed embodiment using “at least” terminology disclosed in the Specification. (App. Br. 10).

ISSUE

Have Appellants shown that the Examiner reversibly erred in finding that the Specification does not provide written description support for “about 8 percent by weight” nanoclay?

FINDINGS OF FACT

The record supports the following findings of fact (FF) by a preponderance of the evidence.

1. Appellants’ Specification states that Examples 5-16 contain 8 wt. percent nanoclay. (Spec. 11: 3-5).
2. Appellants’ Specification states:

One aspect of the invention is a nanocomposite having a weight ratio of nanoclay to compatibilizing dispersion agent of less than 2.2:1 and greater than 1:1.9. In this ratio, this nanocomposite is useful as a compound for a final article formation via molding or extrusion. *Preferably, this nanocomposite has a minimum of 9 weight percent nanoclay dispersed in the nanocomposite compound.* More preferably, the nanoclay concentration is 10 or more weight percent. Most

preferably, the nanoclay concentration is at least 12 weight percent.

(Spec. 2:12-19) (emphasis added).

## PRINCIPLES OF LAW

As explained in *University of California v. Eli Lilly and Co.*, 119 F.3d 1559, 1566 (Fed. Cir. 1997),

[t]o fulfill the written description requirement, a patent specification must describe an invention and do so in sufficient detail that one skilled in the art can clearly conclude that "the inventor invented the claimed invention." *Lockwood v. American Airlines, Inc.*, 107 F.3d 1565, 1572, 41 USPQ2d 1961, 1966 (1997); *In re Gosteli*, 872 F.2d 1008, 1012, 10 USPQ2d 1614, 1618 (Fed. Cir. 1989) ("[T]he description must clearly allow persons of ordinary skill in the art to recognize that [the inventor] invented what is claimed."). Thus, an applicant complies with the written description requirement "by describing the invention, with all its claimed limitations, not that which makes it obvious," and by using "such descriptive means as words, structures, figures, diagrams, formulas, etc., that set forth the claimed invention." *Lockwood*, 107 F.3d at 1572, 41 USPQ2d at 1966.

In other words, the disclosure must convey with reasonable clarity to those skilled in the art that the inventor was in possession of the invention.

*Vas-Cath, Inc. v. Mahurkar*, 935 F.2d 1555, 1563-64 (Fed. Cir. 1991).

Compliance with the written description requirement is a question of fact. *Id.*, at 1562-63.

## ANALYSIS

We are not persuaded by Appellants' arguments that the Specification provides written description support for nanoclay amounts of "about" 8 percent by weight. Although the Specification provides specific examples

where the amount of nanoclay is 8 percent by weight, the Specification fails to provide any guidance that the amount of nanoclay can also include amounts of “about” 8 percent by weight. Indeed, the second non-claimed embodiment of the Specification relied on by Appellants for support contains “a minimum of 9 weight percent nanoclay dispersed in the nanocomposite compound.” (FF 2). Therefore, the most preferred range for the second embodiment of “at least 12 weight percent” nanoclay does nothing to help persons of ordinary skill in the art recognize that Appellants’ specific examples at 8 percent by weight nanoclay include amounts of “about” 8 percent by weight nanoclay as recited in the claims. Moreover, the term “about” encompasses amounts below 8 which have not been shown to be supported by the specification.

*35 U.S.C. § 103(a) Rejection*

The Examiner found that Drewniak discloses compounds, articles, and methods that encompass the instantly claimed amounts of ingredients recited in the claims. (Ans. 4-5). The Examiner determined that it would have been obvious to use the recited ingredient combinations and amounts because “they are encompassed by the reference and would have been expected to give the properties and results disclosed by the reference.” (Ans. 5).

Appellants contend that the broad ranges disclosed in Drewniak should not be believed and that the only proper ranges in Drewniak are those disclosed in paragraphs [0015]-[0024] in conjunction with Examples 1-12. (App. Br. 11). Appellants argue that the comparative data present in the Specification shows the superior benefits of the recited nanocomposite. (App. Br. 12). Appellants admit that the amounts of nanoclay and compatibilizing dispersion agent disclosed in Drewniak include the recited

ratios of nanoclay to compatibilizing dispersion agent recited in the claims, but argue that if such combinations were true, Drewniak would have provided actual data. (App. Br. 13).

## ISSUE

Have Appellants shown that: (1) the Examiner reversibly erred in determining that the ratios of nanoclay to compatibilizing dispersion agent recited in the claims would have been obvious to one of ordinary skill in the art in view of Drewniak; and if not, then (2) the comparative examples are sufficient evidence of secondary considerations to overcome the Examiner's evidence of obviousness?

## FINDINGS OF FACT

The record supports the following findings of fact (FF) by a preponderance of the evidence.

3. Drewniak states:

In one embodiment, the polyolefin blend in the article includes from about 70 to 95 percent by weight of polyolefin, from about 1 to 10 percent by weight of functionalized polyolefin, and from about 4 to 20 percent by weight of organically modified clay to provide a ratio of the melt strength of the modified blend to the melt strength of the blend before modification measured at 220° C. of at least about 1.6 but no more than about 14. In a preferred embodiment, the polyolefin blend in the article includes from about 85 to 92 percent by weight of polyolefin, from about 2 to 5 percent by weight of functionalized polyolefin, and from about 6 to 10 percent by weight of organically modified clay, wherein the total amounts [sic] to 100%, to provide a ratio of the melt strength of the modified blend to the melt strength of the blend before

modification measured at 220°C. of at least about 1.6 but no more than about 14.  
(Para. [0018]) (emphasis added).

4. Appellants' Specification states:

If the weight ratio of nanoclay to compatibilizing dispersion agent is greater than 3.1:1 and less than 10:1, then the pellets are suitable for use as concentrates for dilution or "let down" in later molding operations to make a final article . . . If the weight ratio of nanoclay to compatibilizing dispersion agent of less than 2.2:1 and greater than 1:1.9, then the pellets are suitable for use as a final compound for molding or extrusion into a final article.  
(Spec. 6:27 – 7:11).

5. Appellants' comparative examples do not compare composites having different nanoclay to compatibilizing dispersion agent ratios. (Spec. 10:1-2; Table 3).

#### PRINCIPLES OF LAW

The disclosure of a reference may be relied upon for all it contains, and is not limited what is disclosed in the examples. *In re Heck*, 699 F.2d 1331, 1332-33 (Fed. Cir. 1983) (quoting *In re Lemelson*, 397 F.2d 1006, 1009 (CCPA 1968)). The Federal Circuit has held that when the difference between a claimed invention and the prior art is a claimed range; the applicant must show that the range is critical through unexpected results. *In re Woodruff*, 919 F.2d 1575, 1578 (Fed. Cir. 1990) (internal citations omitted).

In order to prove unexpected results, the invention must be compared with the closest prior art. *In re Baxter Travenol Labs.*, 952 F.2d 388, 392 (Fed. Cir. 1991). In addition, for a showing of unexpected results to

overcome the teachings of the prior art, the results presented must be commensurate in scope with the claims. *See In re Kollman*, 595 F.2d 48 (CCPA 1979).

## ANALYSIS

Appellants have not separately grouped the claims. Accordingly, we confine our discussion to appealed claim 1, which contains claim limitations representative of the arguments made by Appellants pursuant to 37 C.F.R. § 41.37(c)(1)(vii).<sup>1</sup>

We are not persuaded by Appellants' argument that the amounts of nanoclay disclosed in Drewniak fail to render the recited amount of nanoclay and recited ratio of nanoclay to compatibilizing dispersion agent obvious. Appellants have not presented any persuasive evidence that the broad amounts disclosed in Drewniak are not operable. *See Impax Labs., Inc. v. Aventis Pharmas. Inc.*, 545 F.3d 1312, 1314 (Fed. Cir. 2008); *In re Sasse*, 629 F.2d 675, 681-82 (CCPA 1980). Additionally, Appellants admit that the amounts of nanoclay and compatibilizing dispersion agent disclosed in Drewniak in preferred embodiments include combinations having the recited ratios. (App. Br. 13, FF 3). Accordingly, Appellants have failed to demonstrate error in the Examiner's determination of obviousness.

We also agree with the Examiner that Appellants evidence of superior performance is insufficient to overcome the Examiner's determination of obviousness. Appellants' results do not compare the closest prior art, which

---

<sup>1</sup> Only those arguments actually made by Appellants have been considered in this decision. Arguments which Appellants could have made but chose not to make have not been considered and are deemed to be waived. *See* 37 C.F.R. § 41.37(c)(1)(vii) (2009).

is Drewniak. In other words, Appellants have not presented any results showing that different nanoclay to compatibilizing dispersion agent ratios have an effect on the superior results alleged by Appellants. Indeed, Appellants' Specification suggests that the ratios may be varied based on the different end uses of the composite. (FF 4).

In addition, Appellants do not provide results at varying amounts of nanoclay. (*See* FF 5). Accordingly, Appellants' results are not commensurate in scope with the claims. Thus, weighing the Examiner's evidence against Appellants' evidence of superior results, Appellants have failed to demonstrate sufficient secondary considerations to overcome the Examiner's evidence of obviousness.

*35 U.S.C. § 102(b) Rejection*

The Examiner found that Drewniak discloses the recited composite including examples having amounts falling within the scope of the claims. (Ans. 3-4).

Appellants contend that Drewniak does not disclose the nanoclay to compatibilizing dispersion agent ratios recited in the claims and that the ratios in Drewniak's examples are all outside the recited ratio range. (App. Br. 11-12).

The issue is: have Appellants have demonstrated that the Examiner reversibly erred in finding that Drewniak discloses the recited nanoclay to compatibilizing dispersion agent ratio recited in the claims within the meaning of 35 U.S.C. § 102?

For a rejection under 35 U.S.C. 102 to be proper, the prior art "must clearly and unequivocally disclose the claimed [invention] or direct those

skilled in the art to the [invention] without *any* need for picking, choosing, and combining various disclosures not directly related to each other by the teachings of the cited reference.” *In re Arkley*, 455 F.2d 586 (CCPA 1972) (emphasis in original). The court went on to state: “[s]uch picking and choosing may be entirely proper in the making of a 103, obviousness rejection, where the applicant must be afforded an opportunity to rebut with objective evidence any inference of obviousness which may arise from the *similarity* of the subject matter which he claims to the prior art, but it has no place in the making of a 102, anticipation rejection.” *Id.*

We agree with Appellants, that Drewniak does not disclose the recited nanoclay to compatibilizing dispersion agent ratio. Drewniak does not disclose the recited ratio or any specific examples having the ratio as claimed. Thus, while we agree with the Examiner that it would have been obvious to select amounts of nanoclay and compatibilizing dispersion agent falling within the ratios as recited in the claims discussed *supra*, Drewniak does not expressly exemplify amounts of nanoclay and compatibilizing dispersion agent falling within the recited ratios. Accordingly, we cannot sustain the Examiner’s rejection under 35 U.S.C. § 102(b).

## CONCLUSION

Appellants have failed to demonstrate that the Examiner reversibly erred in finding that the Specification does not provide written description support for “about 8 percent by weight” nanoclay.

Appellants have failed to demonstrate that the Examiner reversibly erred in determining that the ratios of nanoclay to compatibilizing dispersion agent recited in the claims would have been obvious to one of ordinary skill

in the art in view of Drewniak. Appellants have also failed to demonstrate that the comparative examples are sufficient evidence of secondary considerations to overcome the Examiner's evidence of obviousness.

Appellants have demonstrated that the Examiner reversibly erred in finding that Drewniak discloses the recited nanoclay to compatibilizing dispersion agent ratio recited in the claims within the meaning of 35 U.S.C. § 102.

**ORDER**

We affirm the Examiner's decision rejecting claims 1-20 under 35 U.S.C. § 112, first paragraph as failing to comply with the written description requirement.

We affirm the Examiner's decision rejecting claims 1-20 under 35 U.S.C. § 103(a) as being unpatentable over Drewniak.

We reverse the Examiner's decision rejecting claims 1-20 under 35 U.S.C. § 102(b) as being unpatentable over Drewniak.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

**AFFIRMED**

tc

POLYONE CORPORATION  
33587 WALKER ROAD  
AVON LAKE, OH 44012